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Opposite-sex relationship questionnaire for female adolescents: development and psychometric evolution

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Abstract:

Aim: The goal of the present study is to adopt state-of-the-art techniques and standards to develop and evaluate a measure, called the opposite-sex relationship questionnaire for female adolescents (OSRQFA), to assess the reasons why adolescent girls would or would not develop a relationship with an adolescent boy.

Methods: A mixed-method, sequential, exploratory design was adopted. In the qualitative phase, an in-depth interview approach was used to identify the properties and dimensions to be included in the OSRQFA. In the quantitative phase, the psychometric properties of the OSRQFA were evaluated according to face, content and construct validity. Reliability and stability were assessed with Cronbach's α and test-retest analysis, respectively.

Results: A preliminary questionnaire including 86 items which emerged from the qualitative phase of the study was designed. Based on the impact scores for face validity and the cutoff points for the content validity ratio (CVR) and content validity index (CVI), the preliminary questionnaire was reduced to 57 items. The Kaiser criteria (eigenvalues >1) and scree plot tests demonstrated that 21 items forming six factors, which were labeled 'innate predilection', 'abstinence', 'peer pressure', 'fear of the relationship consequences', 'family atmosphere' and 'risk taking', that accounted for an estimated 66.19% of variance provided an optimal fit with the data. These scales had acceptable levels of internal consistency ($\alpha = 0.822$) and stability ($r = 0.871$, $p < 0.001$).

Conclusion: The OSRQFA with 21 items and 6 factors demonstrated suitable validity and reliability in a sample of Iranian female adolescents. The OSRQFA's has good psychometric properties, and can be used by other researchers in future studies.

Keywords: adolescent, psychometric properties, relationship, reliability, validity

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Introduction

Relationships with the opposite-sex (OS) is a common feature of adolescent experience [1]. The prevalence of relationships with the OS globally has increased significantly in recent years [2]. According to theorists, relationships with the OS in adolescence are initiated because of the emerging needs in adolescence for romantic and sexual relations with peers, and close and intimate relations with individuals outside the family [3]. Sexual needs include feeling and expressing lust, desire and sex appeal as well as the possibility to participate in a sexual relationship with a partner [4]. Intimacy needs include high levels of emotional closeness, trust, mutual disclosure and understanding with a partner, and expressing romantic feelings [5], [6]. Desire for closeness with a peer is part of developing interdependence and autonomy [7]. According to Collin and Steinberg [8], these needs function to help partners connect with each other [9].

Many adolescents report that they spend a lot of time with the OS [10]. Having a relationship with a member of the OS promotes well-being in adolescents by facilitating identity development, the formation of close relationships with friends, autonomy, and educational achievement and career planning [11]. Also, these early OS

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relationships may affect the nature of romantic relationships later in life [12]. Relationships with OS, however, can be healthy or risky [10]. Healthy OS relationships consist of open communication and high levels of trust, and are typically between two individuals of the same age. Healthy relationships help adolescents boost their sense of identity, promote interpersonal skills [13] and provide emotional support. Unhealthy relationships with the OS put adolescents at risk for abuse, sexually transmitted diseases, teen pregnancy [14], [15], and the adoption of unhealthy relationship styles [10], [16].

Research on the individual and social parameters that are believed to affect the involvement in a relationship with the OS in adolescence is lacking globally, but this is particularly striking in traditional Islamic societies such as Iran [1]. In Iranian society, relationships with the OS prior to marriage are legally, religiously and culturally prohibited. Nevertheless, as a function of increased access to global media, immigration and communication technology, and the transmission of images and descriptions of experiences that occur in more permissive Western cultures, Iranian youth have become more oriented toward relationships with the OS [2], [17]. Due to cultural expectations imposed on members of Iranian society by particular interpretations of Islamic teachings, adolescents in Iran experience a social environment that is very different from that of Western contexts [1], [2]. They realize that although relations with a member of the OS are forbidden in their own society, they occur frequently in other societies and can be a source of pleasure. Thus, the dynamics related to the decision to enter into a relationships with the OS may differ substantially for Iranian youth, and perhaps Muslim youth more generally relative to adolescents in modern Western societies [1].

Research on adolescent development typically emerges from North American or other Western contexts and the lack of research from other cultural contexts is a grave limitation. This paucity of research severely limits our understanding of adolescent development as it fails to acknowledge the full range of contextual factors that affect basic forms of experience, such as relationships with the OS. The perception of the OS varies considerably across cultures [18], [19]. A full understanding of adolescent development needs to be based on a literature that includes samples drawn from a diverse set of cultural contexts.

Currently, one instrument is used most frequently to measure adolescents' experiences of relationships with the OS. The "network of relationships inventory" (NRI) developed by Furman and Buhrmester measures features of relationships with parents, siblings, teachers, same- and OS friends (Furman and Buhrmester, [20]). The extensive use of this scale is a powerful testimony to its many strengths and broad utility. In spite of its wide applicability, however, the NRI is not without its limitations. First, its focus on relationship features overlooks other critical issues such as motives for having and not having an OS friend. Second, it was developed for use with a Western population, it may not fully capture issues that are critical to other cultural contexts, such as Muslim societies of the Middle East. The accurate assessment of a concept is possible only when there is a valid and reliable measure for it. The purpose of this study was to develop and to evaluate the psychometric properties of the opposite-sex relationship questionnaire (OSRQ) in a sample of Iranian female adolescents. In this exploratory study we identified the factors influencing the formation of relationships with the OS in a sample of Iranian female adolescents, and validated this concept.

Materials and methods

A mixed (qualitative and quantitative) sequential exploratory design was used. The study was conducted in two phases: a qualitative phase (designing of the questionnaire) and a quantitative phase (assessment of psychometric properties).

Qualitative phase: designing of the questionnaire

The first phase consisted of a qualitative study including interviews with female adolescents and key informants, and a review of the literature. The goals of this phase were to identify key factors used by adolescent Iranian girls to explain their participation, or lack of participation, in a relationship with an OS and to generate items to measure these factors.

Semi-structured interviews

We performed a conventional qualitative content analysis [21] to identify the factors that promote or impede opposite-sex relationships (OSRs) among Iranian female adolescents. The recruitment phase of the study took place in public areas including parks, cultural centers, cinemas, and coffee shops in Tehran, the largest city in

Iran, and its capital. Participants were a sample of adolescent females, aged 14–19 years old, who were in high school and who either have or have never experienced an OSR. In order to recruit participants and to arrange the interviews, the first author went to the aforementioned locations, at different times of day and on different days of the week. Female adolescents were approached and were asked if they were willing to voluntarily participate in the study. In order to ensure a representative sample, we assessed demographic characteristics of participants. In addition, the recruiter ensured that those who agreed to participate in the study varied in terms of their relationship status. Adolescents differed in age, educational level of parents, socioeconomic status, and occupational status of parents.

During the interview process, data were collected up until the point of data saturation (i.e. when no new information was obtained [22]). Data saturation was reached after 20 interviews. Interviews were conducted one-on-one with a member of the research team and were scheduled at a time that was convenient for the participants. Interview questions were open-ended to allow respondents to describe their opinions, perceptions, and experiences in a thorough manner. The interviewer focused on identifying the deterring and encouraging factors that each interviewee perceived as being an important for determining whether or not they entered into an OSR. Probing questions were used to obtain more in-depth information about each participant's experience. All of the interviews were conducted by the same interviewer (the first author). Interviews ranged in length from 30 to 60 min, with an average of 45 min. The interviews were recorded with a digital sound recorder, and immediately after each interview the recorded content was transcribed verbatim. Interviews were also conducted with 15 key informants including reproductive health practitioners, sociologists, psychiatrists, sexologists, and religious counselors to gather further information for item generation.

Literature review

Authors conducted a search for published research on instruments that assessed OSRs. Databases that provided the highest yield of articles on the study topic were chosen to compile an initial list of articles and abstracts. The key search terms used were 'friendship', 'relationship', 'adolescents', 'other-sex', and 'opposite sex' in the CINAHL, PubMed (including Medline), British Nursing Index, EMBASE, PsycINFO, GoogleScholar databases, and Persian databases including scientific data base (SID), IranDak and Magiran. The codes and categories extracted from the literature review were compared with the items that emerged from the qualitative study. These three sources of information- interviews with female adolescents and key informants, and a review of the literature- were then used to develop items for the OSRQFA. The data was checked for credibility, transferability, dependability and conformability to establish the integrity of the data. To assure these criteria of research quality, we took several approaches in this study [23], [24]. Techniques such as prolonged engagement with the participants and data, peer-checking, and constant comparison were used for enhancing the credibility of study findings. Some interviews were reread and reanalyzed by a co-researcher who was a sociologist and expert in qualitative data analysis processes. Moreover, we employed member-checking technique for establishing the dependability of the findings. Accordingly, we provided study participants with a summary of codes generated and interview transcripts and asked them to determine how much our analyses reflected their experiences. For establishing the confirmability of the study findings, we asked two independent reviewers (second and third authors who were familiar with qualitative data analysis) to assess the accuracy of our analytic activities. All of them approved our data analysis. Finally, we provided detailed descriptions of the study data to improve the transferability of the study findings [25].

Quantitative phase: assessment of psychometric properties

The purpose of the quantitative part of the study was to evaluate the psychometric properties of the OSRQFA. We assessed face, content, and construct validity and internal consistency and stability of the questionnaire.

Face validity

The face validity of the OSRQFA was assessed both qualitatively and quantitatively, see below.

Qualitative face validity

To assess the qualitative face validity of OSRQFA, 10 Iranian female adolescents were invited to assess and comment on the appropriateness, difficulty, relevance, and ambiguity of the items. The time required to com-

plete the questionnaire was determined in this step. The questionnaire was amended according to adolescents' comments.

Quantitative face validity assessment

The item impact technique was used to assess the quantitative face validity of the OSRQFA. The same 10 female adolescents were asked to determine the importance of the items on a Likert-type scale from 1 (Not important) to 5 (Very important). The item impact score of each item was calculated by using the following formula: Importance \times Frequency (%). In this formula, frequency is equal to the number of adolescents who ascribed a score of 4 or 5 to the item in question and importance was equal to scores 4 or 5. If the impact score of the item was greater than 1.5, the item was considered as suitable and it was maintained in the questionnaire [26].

Content validity assessment

The content validity of the OSRQFA was also assessed both qualitatively and quantitatively, see below.

Qualitative content validity assessment

In this step, the OSRQFA was administered to 15 experts (seven reproductive health doctorates, two sociologists, two psychiatrists, two clinical psychologists, and two sexologists) who were asked to assess and comment on the wording, item allocation, and scaling of the items [27].

Quantitative content validity assessment

The quantitative content validity of the OSRQFA was assessed by calculating a content validity ratio (CVR) and content validity index (CVI) for each item based on the Waltz and Bausell's recommendations [28]. The CVR reflects whether the items are essential or not. Fifteen experts (mentioned above) were asked to rate how essential the items of the OSRQFA were on a three-point scale where 1 = Not essential, 2 = Useful but not essential, and 3 = Essential [29]. The CVR of each item was calculated with the following formula: $CVR = (n_e - (N/2)) / (N/2)$. In this formula, N and n_e are equal to the total number of experts and the number of experts who score the intended item as 'Essential', respectively. According to Lawshe [30], when the number of panelists is 15, the minimum acceptable CVR is 0.49.

The CVI is the degree to which the items are simple, relevant, and clear. The CVI can be calculated for each item of a scale (item-level or I-CVI) and for the overall scale (scale-level or S-CVI). We assessed I-CVI only. We asked the same 15 panelists to rate the simplicity, relevance, and clarity of the OSRQFA items on a four-point scale from 1 to 4. Using relevance as an example, the four points for rating the relevance of the items were '1 = Not relevant', '2 = Somewhat relevant', '3 = Quite relevant', and '4 = Highly relevant'. The scales for simplicity and clarity were scored similarly. The I-CVI of each item was calculated by dividing the number of panelists who had rated that item as three or four by the total number of the panelists. Jay Lynn et al. [31] noted that when the number of panelists is equal to 15, the items which acquire an I-CVI value of 0.79 or greater are considered as appropriate.

Construct validity assessment

Construct validity was evaluated through exploratory factor analysis (EFA) with Varimax rotation on 353 female adolescents. Munro [32] states that the required number of respondents for EFA is between 3 and 10 persons per item. The Kaiser-Meyer-Olkin (KMO) test and the Bartlett's test of sphericity were used to check the appropriateness of the study sample and the model fit. The number of factors was determined based on eigenvalues ≥ 1 and a scree plot. Items with absolute loading values of 0.4 or greater were regarded as appropriate [33].

Reliability assessment

The reliability of the OSRQFA was assessed by evaluating its internal consistency by calculating Cronbach's α . α values of 0.7 or greater show satisfactory internal consistency [34]. Cronbach's α coefficient was measured for both individual subscales and for the whole questionnaire. We evaluated the stability of the OSRQFA with

the test–retest method. More specifically, the correlation of scores of the OSRQFA administered 2 weeks apart was computed for 20 respondents chosen using a convenience sampling method. A summary of the instrument development and psychometric properties is shown in Figure 1.

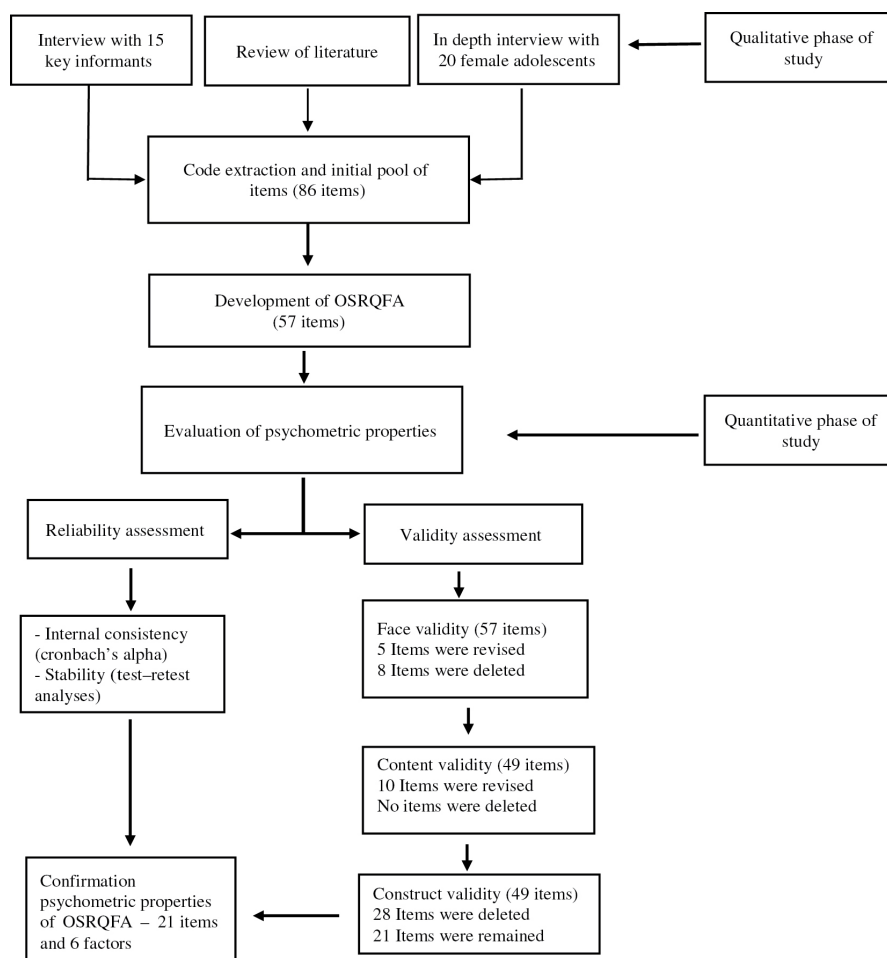


Figure 1: A summary of the instrument development and psychometric properties of OSRQFA.

Ethical considerations

The Ethics Committee of the Medical Sciences approved the study. Aims and processes of the study were explained to participants. All participants were informed that their participation was voluntary and that they were free to discontinue at any point in the study without any repercussions. A written informed consent was obtained from each participant and her parents, and the researchers indicated that all data would be kept confidential.

Results

Findings of the present study are presented in two parts: developing the instrument (qualitative phase) and assessing the psychometric properties of the OSRQFA (quantitative phase).

Qualitative phase: designing the questionnaire

Interviews with the 20 female adolescents and 15 key informants and the literature review led to the description of OSRs and the identification of factors that promote and impede OSRs. Based on these findings, the initial pool questionnaire included 86 items (51 items were extracted from interviews with female adolescents, 21 items from interviews with key informants, and 14 items from the review of literature). The items were reviewed by

the research team with regard to integrity and to find and eliminate repetitive and overlapping items, which led to the reduction of items from 86 to 57 items. The OSRQFA items are scored on a five-point Likert scale from 1 (completely agree) to 5 (completely disagree). Higher scores indicates more chance of adolescents entering into a relationship with the OS.

Quantitative phase: assessment of psychometric properties

Table 1 shows the detailed frequencies/percentages or mean/standard deviation of the demographic information. The dataset consisted of 353 Iranian female adolescents, aged 14–19 years old ($M = 17.8$, $SD = 1.37$). The majority of the respondents were pre-university students (45.6%), 70% of the adolescents reported living in families with warm parent-child relationships, and 55.5% reported that their mothers controlled their behavior.

Table 1: Demographic profiles of respondents ($n = 353$).

Variables	n (%) or Mean (SD)	Variables	n (%) or Mean (SD)
Age	17.8 (1.37)	Father's job	
Hours spent alone per day	6.36 (5.61)	Working class	50 (14.2)
Mother's age	42.64 (5.61)	Employee	105 (29.7)
Father's age	47.27 (6.14)	Self-employed	151 (42.8)
Educational level (high school year)		Retired	47 (13.3)
First year	52 (14.7)	Mother's job	
Second year	61 (17.3)	Housewife	260 (73.7)
Third year	79 (22.4)	Employee	58 (16.4)
Pre-university	161 (45.6)	Self-employed	23 (6.5)
Mother's education		Retired	12 (3.4)
No formal education	14 (4)	Family dynamics	
Primary	39 (11)	Warm parent-child relationships	247 (70)
Guidance	77 (21)	Cold parent-child relationships	36 (10.2)
Diploma	148 (41)	Cold parent-parent relationship but warm parent-child relationship	36 (10.2)
College/University	75 (21)	Parents live together but cold relationship	14 (4)
Father's education		Divorced parents	12 (3.4)
No formal education	8 (2.3)	Loss of a parent	8 (2.3)
Primary	38 (10.8)	Who controls your behavior more?	
Guidance	64 (18.1)	Father	76 (21.5)
Diploma	148 (41.9)	Mother	197 (55.8)
College/University	95 (26.9)	Sister	46 (13)
Mother's addiction		Brother	25 (7.1)
Yes	9 (2.5)	Others	9 (2.6)
No	340 (96.3)	Religious belief	
Don't know	4 (1.1)	None at all	31 (8.8)
Father's addiction		Weak	75 (21.2)
Yes	48 (13.6)	Average	215 (60.9)
No	299 (84.7)	Strong	32 (9.1)
Don't know	6 (1.7)		
Substance abuse			
Yes	81 (22.9)		
No	272 (77.1)		

Designing the OSRQFA was followed by the psychometric assessment phase during which the questionnaire was evaluated with regard to face, content, and construct validity as well as reliability.

Face validity

In the qualitative face validity assessment, 5 items were modified based on the suggestions of female adolescents, and 8 items were merged with similar items because of overlapping content. None of items were deleted during the quantitative face validity as they obtained an item impact score higher than 1.5. Finally, the 49-item questionnaire entered the content validity measurement phase.

Content validity

In the qualitative content validity assessment, specialists' perspectives led to the revision and modification of ten items. No items were omitted as all CVRs and I-CVIs were greater than 0.49 and 0.79, respectively. The OSRQFA with 49 items entered the construct validity assessment (Table 2).

Table 2: The CVR and I-CVI for the OSRQFA.

No.	Items	Impact score	CVI			CVR
			Simplicity (1–4)	Relevancy (1–4)	Clarity (1–4)	Essential (1–3)
1	I'm old enough to know whether an opposite-sex relationship is good or bad for me	5	0.86	0.8	0.93	0.86
2	Opposite-sex relationships do not cause me any problem or risk	5	0.86	1	0.8	1
3	I have a lot of self-confidence	5	0.86	0.93	0.8	0.86
4	I feel guilty for having an opposite-sex relationship	5	0.86	1	0.93	1
5	Study and education is the most important thing for me	5	1	1	1	1
6	I prefer to spend my leisure time doing acceptable activities such as sport, studying, or learning (music, foreign language, etc.)	5	0.86	0.93	0.8	1
7	Others' experiences in opposite-sex relationship are important and informative to me	5	0.86	0.8	0.8	0.86
8	I have strong religious beliefs	5	0.93	1	0.93	1
9	I feel ashamed of the divulgence of my OS relationships to my significant others (e.g. parents, siblings, etc.)	4.1	0.93	1	0.8	0.86
10	I fear the loss of my opposite-sex friend	5	0.86	1	0.93	1
11	Having [opposite-sex] relationships is a threat to my reputation and my family's reputation	4.6	0.86	1	0.8	0.86
12	Having [opposite-sex] relationships will cause problems for me in my future life	4.4	1	1	1	1
13	Having [opposite-sex] relationships threatens my physical health (e.g. unwanted pregnancy, loss of virginity, sexually-transmitted disease, etc.)	5	0.86	1	0.86	1
14	I have complete control over my own behaviors	5	0.86	0.93	0.86	1
15	In the opportunity presents itself, I will establish a sexual relationship with my friend of the opposite-sex	5	0.86	1	0.8	1
16	Having a sexual relationship is against my religious beliefs	5	0.93	1	0.8	0.86
17	I am committed to my ethical values	4.3	0.86	1	0.93	1
18	I have learned from the bad experiences of others and will avoid opposite sex relationships	5	0.86	1	0.8	0.86

19	I can say no to an offer for an opposite sex relationship, based on what I've learned from the bad experiences of others	5	1	1	1	1
20	To maintain my relationship, I'm ready to have sexual relationship with my [opposite-sex] friend	5	0.86	1	0.86	1
21	Emotionally, I'm totally dependent on my friend	5	0.86	0.93	0.86	1
22	My sex drive and sexual needs are high	4.4				
23	I find members of the opposite sex appealing and I am driven to interact with them	5	0.86	1	0.8	1
24	I need an intimate opposite-sex friend to share my emotions and feelings with	4.5	0.86	0.93	0.8	0.86
25	It feels good to have the attention of someone of the opposite-sex	5	0.86	1	0.93	1
26	I have adequate information about how to maintain my own sexual and reproductive health	4.2	1	1	1	1
27	My family relationships are cold	5	0.86	0.93	0.8	1
28	I receive good emotional support from my parents	5	0.86	0.8	0.8	0.86
29	Parental separation has an significant role in whether or not I enter an opposite-sex relationship	4.9	0.86	1	0.8	1
30	Parental addiction has a significant role in whether or not I enter an opposite-sex relationship	4.2	0.86	1	0.8	1
31	My family cannot control my behaviors	4.3	0.86	0.93	0.8	.86
32	My parents control my behaviors in overt and covert ways	4.5	0.86	1	0.93	1
33	My family gives me a lot of freedom	4.3	1	1	1	1
34	My family has a strict control over my behaviors	4.2	0.86	0.93	0.8	1
35	My mother has accepted/would accept my opposite-sex relationship	4.4	0.86	0.8	0.8	0.86
36	My father has accepted/would accept my opposite-sex relationship	4.6	0.93	1	0.93	1
37	I'm worried about being ridiculed by my friends	4.7	0.86	1	0.8	1
38	I fear that my friends would reject me from their circle if I had a relationship with the opposite sex	4.4	1	1	1	1
39	Why shouldn't I have an opposite-sex relationship when most of my friends have one?	5	0.86	1	0.86	1
40	My friends encourage and support my behaviors	5	0.86	0.93	0.86	1
41	My friends help me in establishing and maintaining an opposite-sex relationship	4.2	0.86	1	0.8	1
42	Opposite-sex relationships are a reprehensible practice in our community	5	0.93	1	0.8	0.86
43	Opposite-sex relationships have become a usual practice in our community	4.2	0.86	1	0.93	1
44	I follow movies and series in which girls and boys have free relationships	4.6	0.86	1	0.8	0.86
45	I follow stories and talks about or involving sex on the internet	5	1	1	1	1
46	My friends who have no opposite-sex relationships warn me against entering such relationships	4.4	0.86	1	0.86	1
47	There is no useful formal information (e.g. schoolbooks, media, parents, and schools) about the consequences of opposite-sex relationships	4.1	0.86	0.93	0.86	1

48	The rate of opposite-sex relationships have increased in the recent years both in Iran and throughout the world	5	1	1	1	1
49	Having a sexual relationship has turned into a usual practice in the community	4.4	0.86	0.93	0.8	1

Construct validity

When the number of respondents reached 353 female adolescents, the KMO index reached the value of 0.821 and so the researchers stopped sampling and construct validity was evaluated. The result of Bartlett's sphericity test was significant ($\chi^2 = 6399.98$, $p < 0.001$). Thus the null hypothesis was rejected, demonstrating that there are correlations in the present data set that are appropriate for factor analysis.

A scree plot was used to predict the number of scale factors. The scree plot suggested 6 factors that became the default for factor analysis (Figure 2). As a result of the EFA, items were reduced from 49 to 21. Specifically, using the eigenvalue greater than one criterion, the EFA extracted 6 factors consisting of a 5-item factor that named Innate Predilection (comprised of items 23, 24, 25, 22, 21; eigenvalue = 5.455), a 5-item factor that named Abstinence (comprised of items 17, 18, 19, 15, 20; eigenvalue = 2.401), a 4-item factor that named Peer pressure (containing items 41, 39, 40, 38; eigenvalue = 1.867), a 3-item factor that named fear of the relationship consequences (containing items 11, 13, 12; eigenvalue = 1.704), another two-item factor that named family atmosphere (comprised of items 29, 30; eigenvalue = 1.313), and a two-item factor that named risk taking (comprised of items 3, 2; eigenvalue = 1.159) together accounting for 66.19% of the variance (Table 3).

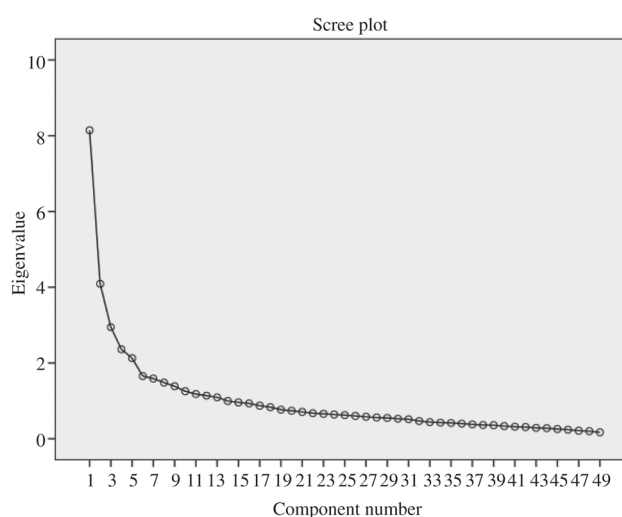


Figure 2: Scree plot for the exploratory factor analysis of the OSRQFA.

Table 3: Exploratory factor loadings of items in OSRQFA.

No.	Factors name	Items	Load-ing	Communi-ties	% Variance	Eigenval-ues
1	Innate predilection	23. I find members of the opposite sex appealing and I am driven to interact with them	0.837	0.740	16.335	5.455
		24. I need an intimate opposite-sex friend to share my emotions and feelings with	0.798	0.730		
		25. It feels good to have the attention of someone of the opposite-sex	0.774	0.720		
		22. My sex drive and sexual needs are high	0.697	0.658		
		21. Emotionally, I'm totally dependent on my friend	0.681	0.517		
2	Abstinence	17. I am committed to my ethical values	0.765	0.650	13.676	2.401
		18. I have learned from the bad experiences of others and will avoid opposite sex relationships	0.755	0.642		
		19. I can say no to an offer for an opposite sex relationship, based on what I've learned from the bad experiences of others	0.734	0.561		

3	Peer pressure	15. In the opportunity presents itself, I will establish a sexual relationship with my friend of the opposite-sex	0.644	0.669	10.681	1.867
		20. To maintain my relation, I'm ready to have sexual relationship with my [opposite-sex] friend	0.640	0.702		
		41. My friends help me in establishing and maintaining an opposite-sex relationship	0.769	0.668		
		39. Why shouldn't I have an opposite-sex relationship when most of my friends have one?	0.702	0.648		
		40. My friends encourage and support my behaviors	0.651	0.516		
		38. I fear that my friends would reject me from their circle if I had a relationship with the opposite sex	0.615	0.617		
4	Fear of the relationship consequences	11. Having [opposite-sex] relationships is a threat to my reputation and my family's reputation	0.772	0.641	10.024	1.704
		13. Having [opposite-sex] relationships threatens my physical health (e.g. unwanted pregnancy, loss of virginity, sexually-transmitted disease, etc.)	0.772	0.622		
		12. Having [opposite-sex] relationships will cause problems for me in my future life	0.762	0.672		
5	Family atmosphere	29. Parental separation has an significant role in whether or not I enter an opposite-sex relationship	0.905	0.828	8.198	1.313
		30. Parental addiction has a significant role in whether or not I enter an opposite-sex relationship	0.902	0.826		
6	Risk taking	3. I have a lot of self-confidence	0.822	0.694	7.276	1.159
		2. Opposite-sex relationships do not cause me any problem or risk	0.605	0.579		

Reliability

To ensure reliability, internal consistency of the OSRQFA was assessed with Cronbach's α , which was 0.822 for the whole instrument. The stability was assessed through the test-retest analysis; the spearman's correlation coefficient was 0.871, $p < 0.001$ (Table 4). Thus the OSRQFA demonstrated acceptable reliability and stability.

Table 4: Descriptive statistics and reliability measures for the OSRQFA.

Sub scales	Items (no.)	Mean \pm SD	Cronbach's α	Spearman's correlation coefficient (n=20)	p-Value
Innate predilection	5	15.67 \pm 4.98	0.854	0.891	<0.001
Abstinence	5	10.40 \pm 4.40	0.801	0.832	<0.001
Peer pressure	4	11.74 \pm 3.54	0.715	0.872	<0.001
Fear of the relationship consequences	3	7.05 \pm 2.95	0.716	0.853	<0.001
Family atmosphere	2	7.14 \pm 2.16	0.808	0.822	<0.001
Risk taking	2	6.60 \pm 1.91	0.431	0.832	<0.001
Total	21	58.77 \pm 11.93	0.822	0.871	<0.001

Description of the final questionnaire and scoring procedures

The OSRQFA- 21 items are scored on a five-point Likert scale from 1 (Completely agree) to 5 (Completely disagree). Consequently, the total score of the scale ranges from 21 to 105. Items in questions 12, 13, 15, 17, 18, 19, 20 and 29 are reversely scored. Higher scores indicates a higher probability that a females adolescent will enter a relationship with the OS.

Discussion

The present study aimed to develop and evaluate the psychometric properties of the opposite-sex relationship questionnaire within Iranian female adolescents (OSRQFA). Results revealed that the OSRQFA is a valid and reliable instrument with 21 items and 6 factors including innate predilection, abstinence, peer pressure, fear of the relationship consequences, family atmosphere and risk taking.

The present study showed that “innate predilection” was one of the most critical factors in the relationship with the OS in Iranian female adolescents (see Table 3). The item “I have great innate drive for and appeal to the OS” had the highest loading factor. The lowest loading factor was related to the item “Emotionally, I’m totally dependent on my friend”. This is consistent with previous research which has found that initiating a relationship in adolescence driven by the emerging innate predilection of adolescents for sexual relations and the intensified need for intimacy and dependency with people other than family members. Thus, the origin of the relationship with the OS is the need to make this communication [2]. The higher an adolescent scores on items in this factor, the more likely it is that the adolescent will enter into an OS relationship.

The second factor of the OSRQFA was related to “abstinence”. The item “I am committed to ethical values” had the highest loading factor among the items of this factor. While Innate Predilection is a strong facilitator for adolescents to enter into a relationship with the OS, Abstinence acts as a barrier and can control to some extent the entry of an adolescent into this type of relationship. If the score obtained in this factor is higher, the female entering into an OSR is less likely and even if she does enter, she is less likely to experience high-risk behaviors associated with OSRs. Given the cultural and social context, this factor was expected. Restraint for various reasons (e.g. moral, religious, legal and health care) is common in Iranian culture [35]. Abstinence takes places for various moral, religious, legal and health care reasons. In addition to religious beliefs and spirituality, which are factors which inhibit illicit sexual relations, abstinence is a common factor that may prevent high-risk behaviors in the context of OSRs. Research has emphasized the importance of context in shaping identities [36], [37]. Indeed, individuals form their identities based on the values and beliefs embedded in their social contexts [2]. In a study by Ghafari and colleagues, 57% of adolescents reported the decision to abstain from sexual activity before marriage, 23% did not plan to remain abstinent and 20% were unsure [38]. Sexual abstinence is used as a prevention strategy in reducing the risk of sexually transmitted diseases and AIDS programs in developed countries [39]. In this country, due to cultural and religious backgrounds, this factor may be effectively used to teach young people to reduce risky behavior [2], [35].

The third factor related to the OSRQFA was “peer pressure”. The item “my friends help me in establishing and maintaining OS relationship” had the highest loading factor among the items for this factor. In adolescence, peers have a significant impact on the behavior of adolescents [1]. Adolescents are under pressure from their peers to enter into, or to not enter into, relationships with others. This pressure may be in the form of encouragement or rejection from the group. This can have positive or negative effects on the health of adolescents. Children and adolescents who are rejected or mocked by their peers have been shown to experience loneliness, depression, anxiety and low self-esteem [40], [41]. Sharif and Khanekharab [36] also stated that since during adolescence, questions of identity are heightened, adolescents seek out the advice of peers on issues that impact directly on their developing sense of identity. Providing appropriate social education to adolescents may help to deter risky behavior via the peer group, because of their enormous influence in this period of development.

“The fear of the relationship consequences” was the fourth factor identified in the OSRQFA. In the Iranian context, adolescents associate fears, worries and concerns regarding relationships with the OS [2]. For example, adolescents fear the disclosure of the relationship, associated problems (e.g. loss of virginity and unwanted pregnancy) and disgrace. The sociocultural context of Iranian society denies any contact with the OS in adolescence, especially sex before marriage for girls, and so it seems natural that fear of disgrace is the main source of concern for girls in these relationships. Indeed, OSRs lead to secrecy and fear of disclosure in adolescents, which may result in distancing, and even escape from, the family [42]. Concerns like these play an inhibitory role in initiating contact with the OS in adolescents.

The fifth identified factor of the OSRQFA was “family atmosphere”, which consists of two items: “Parental separation has a significant role in establishing OS relationship” and “Parental addiction has a significant role in the formation of OS relationship”. These two items represent the role of vulnerable families for adolescents’ decision to enter into a relationship with the OS. This is consistent with previous research that shows that adolescents who are children of divorced parents or whose parents are addicts will have a higher chance of entering into OSRs [2], [43]. According to stress theory, stress caused by familial disorders such as parental separation or divorce could lead to the distancing of the young from their parents and family [44]. An increase in conflicts between both parents and the possibility of remarriage contribute to moving away from the family as a warm and productive environment [43], [45]. As a result, adolescents are more likely to leave the family environment and search elsewhere to find warm feelings normally experienced within the family context [46]. Studies show that children of parents who are separated were more likely to initiate sex at a younger age [47], to

experience teenage pregnancy [48] and to marry earlier [49]. By educating families about the impact of family on adolescent's behavior could therefore reduce the likelihood of adolescents engaging in these risky behaviors.

The final factor of the OSRQFA was "risk taking". One of the reasons for high risk taking in this age group is not having an understanding of the consequences of OSRs, especially sexual relationships, and a lack of knowledge about sexual and reproductive health. Consequences of sexual relationships with the OS include unwanted pregnancies and the spread of sexually transmitted diseases [2]. In Iranian society there is a transition from tradition to modernity. With the internet and satellite communications, there is a growing familiarity with western norms and attitudes like independence and individual freedom which contribute to a failure to obey the family and to follow the religious and secular norms. This opens up the possibility of experimentation and influences the development of interpersonal interactions, ultimately resulting in an increase in sexual risk-taking behaviors [50]. Training programs that identify the risks of sexual relationships for adolescents can influence the prevalence of high risk behaviors of this age group.

In this study, the Cronbach's α and test-retest correlations of the OSRQFA were acceptable (see Table 4). An α of more than 0.6 is considered acceptable, and for our study the Cronbach's α was 0.822 [51]. Alphas are influenced by the number of questions in each factor, such that when the number of questions is higher, reliability will be higher, and the opposite is also true [52]. Since the number of questions dealing with the factor 'risk taking' included only two questions, a low α is to be expected. Another reason for a low α is related to low correlation between questions in a factor, as was the case here. One of the questions within the risk taking factor was "I have a great self-confidence". This question may measure the overall confidence of adolescents and not confidence of in the context of risk taking specifically, and thus entering into a relationship with the OS. The questions of this factor, then, are not homogeneous which may have contributed to its low reliability [51], [53].

Conclusion

The OSRQFA-21 was useful in gaining insights into OSRs in Iranian female adolescents, and in identifying factors that promote and impede OSRs. The OSRQFA is a new instrument which was designed and evaluated based on the Iranian context and culture. Regarding the proper psychometric characteristics, it requires further convergent validation. To this end, the OSRQMA should be used by other researchers in other parts of the world with culture and context similar to Iran's.

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